

525, 055

Rec'd PCT/PTO 18 FEB 2005

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
4 March 2004 (04.03.2004)

PCT

(10) International Publication Number  
**WO 2004/018322 A1**

(51) International Patent Classification<sup>7</sup>: **B65D 83/04**

(21) International Application Number:  
PCT/FI2003/000605

(22) International Filing Date: 15 August 2003 (15.08.2003)

(25) Filing Language: Finnish

(26) Publication Language: English

(30) Priority Data:  
20021509 21 August 2002 (21.08.2002) FI

(71) Applicant (for all designated States except US): **ADDOZ OY** [FI/FI]; Viikinkaari 6, FIN-00710 Helsinki (FI).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **VARIS, Reljo** [FI/FI]; Sepeteuksentie 29, FIN-00760 Helsinki (FI).

(74) Agent: **LEITZINGER OY**; Tammasaarenkatu 1, FIN-00180 Helsinki (FI).

(81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

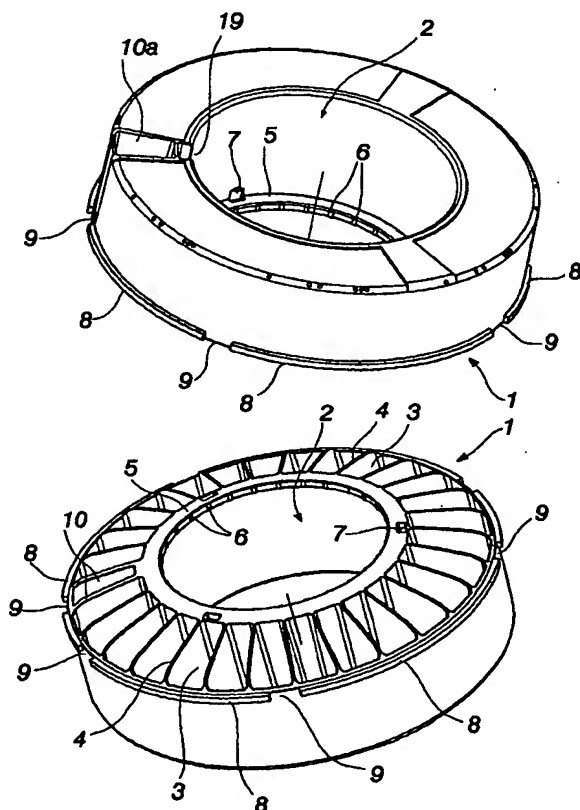
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: DEVICE FOR DISPENSING TABLET- OR CAPSULE-SHAPED MEDICAMENTS IN DESIRED DOSES



(57) Abstract: The device comprises a collar-shaped cassette body (1), including a central opening (2) surrounded by an open-top annular space which is divided by partitions (4) for dosage containers (3). The dosage containers (3) are concealed by a cover (11), rotatable relative to the cassette body (1) and provided adjacent to its circular rim with a dispensing aperture (13), which is coincident with any dosage container (3) by rotating the cover (11). The cover (11) includes a central recess (12) or a collar ring, which is fit to be embedded in the body's central opening (2). The cover (11) is provided with a window (14), through which is visible a dispensing time for at least one dose, which is printed on a dispensing schedule placed in the body's central opening. Cooperation between the body (1) and the cover (11) enables facilitating both dispensing of doses from the dosage containers and loading of medicaments into the dosage containers.

WO 2004/018322 A1

WO 2004/018322 A1



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

Device for dispensing tablet- or capsule-shaped medicaments in desired doses

5 The invention relates to a device for dispensing tablet- or capsule-shaped medicaments in desired doses, the device comprising a collar-shaped cassette body, including a central opening surrounded by an open-top annular space which is divided by partitions for dosage containers, and a cover, concealing the dosage containers, rotatable relative to the cassette body, and provided adjacent to its circular rim with a dispensing aperture  
10 which is coincidable with any dosage container by rotating the cover.

This type of dispenser for medicaments is prior known from the Applicant's patent application WO 02/17850. It is an object of this invention is a further development of such dosage dispensing cassette to enable its use more  
15 effectively than before also as a manually operated dosage dispensing device, which is independent of the automated dispenser and has its features further improved in terms of both dispensing doses from dosage containers and loading doses into the containers.

20 This object is achieved on the basis of the characterizing features set forth in the appended claim 1. The dependent claims disclose preferred structural solutions for the invention.

One exemplary embodiment of the invention will now be described with  
25 reference to the accompanying drawings, in which:

Fig. 1 shows a collar-shaped cassette body for a device of the invention in perspective views from above (bottom figure) and from below (top figure), and

Fig. 2 shows a cover for a device of the invention as seen from above (bottom figure) and from below (top figure).

Fig. 3 shows an example of a dispensing schedule, which is printed on a separate and replaceable substrate.

The device comprises a collar-shaped cassette body 1, including a central opening 2 surrounded by an open-top annular space which is divided by partitions 4 for dosage containers 3. In the illustrated case the number of dosage containers 3 is 28, corresponding to 2 x 7 days a week.

A cover 11 concealing the dosage containers 3 is adapted to be rotatable with respect to the cassette body 1. The cover 11 has its circular rim provided with a knurling 17, which provided a finger grip for making it easier to rotate the cover 11. In the proximity of the cover's 11 circular rim is provided a dispensing aperture 13, which is coincidable with any dosage container 3 by turning the cover 11.

The body 1 has the outer rim of its top edge provided with a circular hem 8 and the cover has its rim provided with inwardly directed lugs 18, the circular hem 8 being provided, at a pitch complementary thereto, with discontinuities 9 which, in just one rotary position of the cover 11, establish passages for the lugs 18. When the cover 11 has been placed in position, in said rotary position, the lugs 18 are engageable behind the circular hem 8 by rotating the cover 11. Thus, the cover 11 will be retained in contact with the body 1 in all other rotary positions of the cover 11 except in the rotary position allowing a passage of the lugs 18. In the illustrated case, this rotary position allowing an attachment and detachment of the cover is selected in such a way that the cover's dispensing aperture 13 falls alongside a compartment 10 present between the dosage containers 3. The compartment 10 has a closed top and an open bottom, and a space occupied thereby is equal to

that occupied by each dosage container 3, i.e. matching to the pitch of the dosage containers 3.

The cover 11 is provided with a recess 12 or a collar ring complementary to its annular wall 15, which is fit to be embedded in the body's 1 central opening 2 as the cover is set in position. The recess 12 is provided with a window 14, through which is visible a dispensing time for at least one dose, which is printed on a dispensing schedule 20 fitted in the body's central opening 2. Thus, the replaceable dispensing schedule 20 (Fig. 3) is insertable from below in the body's central opening 2 to make it bear against a collar flange 5 present at the top rim of the opening 2. Alongside the collar flange 5 are provided protrusions 7 at an appropriate pitch, which enable holding the dispensing schedule in place. The body 1 has its central opening 2 provided with a groove 19 for receiving a bracket 21, which protrudes from the dispensing schedule's circumference and retains the dispensing schedule 20 at a correct angle of rotation. The substrate, on which the discoidal dispensing schedule is printed, may consist of thin cardboard or plastics or paper, backed up by a clear plastic cover. Such a replaceable substrate can be printed, not only with a dispensing schedule, but also with names of medicaments for individual medication dosage. The exemplary case of fig. 3 shows a dispensing schedule for a medicament to be administered 2 times a day.

The outer rim is divided with a colour code 22 complementary to a container pitch or to a multiple of the container pitch. A rim 23 is marked with days of the week. The same day of the week can be in coincidence with several successive containers. A rim 24 carries a numeral designation, which indicates which number of the daily doses is at hand.

The body's central opening 2 has its rim, in the present case the collar flange's 5 inner rim, provided with a knurling 6, having a pitch which is

matched to that of the dosage containers 3. The cover's recess 12 has its outer rim provided, or there are, in contact with the collar flange complementary to the wall 15 of the recess 12, pawls 16 set for cooperation with the knurling 6, which provide a retaining response against rotation of the cover once the cover's aperture 13 is in coincidence with a given dosage container 3. This facilitates positioning the aperture 13 in alignment with the dosage container 3 as the cover 11 is rotated. Reference was made above to a rotary position allowing a passage of the lugs 18. In this rotary position, which enables positioning and removal of the cover, the dispensing aperture 13 falls preferably alongside the closed compartment 10 in coincidence with the first dosage container 3.

If the cover's recess 12 is replaced by just a collar flange surrounding its wall 15, it is nevertheless preferred that the dispensing schedule be concealed over other sections except the one in line with the window 14 revealing a certain dosage area. In other words, the cover's 11 central area, except for the window 14, is essentially non-transparent, regardless whether the question is about the bottom of the recess 12 or the top part of the collar flange, which is flush with the rest of the cover surface. In the present case, a formation 14a in the middle of the window 14 indicates a dose to be dispensed and a schedule therefor. The window is sufficiently wide in either direction for also revealing one dose forward and one dose backward, i.e. the next dose and the dose already taken. The pawls 16 are shaped and designed to allow rotation of the cover in two directions and to make a resistance to rotation backward in the dispensing schedule more powerful than what is encountered when progressing forward in the dispensing schedule. In the illustrated case the pawls 16 consist of pliable tabs. Each tab includes adjoining faces which, depending on the rotating direction of the cover, have a different angle of incidence with ridges of the knurling 6, whereby, when the cover is rotated backward, the tabs 16 are forced to deflect (give way) faster than during a forward rotation of the cover. The

possibility of turning the cover also backward in the dispensing schedule serves in correcting the errors occurring in loading, without having to rotate the cover all the way around. As far as dispensing doses is concerned, the same applies also to accidentally skipping over a dose to be administered.

- 5 Since the resistance to rotation is lower forward in the dispensing schedule, the correct rotating direction is easy to detect on the basis of a rotating response alone.

- 10 The inventive device can be operated manually as such, both for facilitating the loading of medicaments into dosage containers and as an easy-to-use dosage dispenser. However, the same device is also adaptable to the automated system disclosed in the application WO 02/17850.

## Claims

1. A device for dispensing tablet- or capsule-shaped medicaments in desired doses, the device comprising a collar-shaped cassette body (1), including a  
5 central opening (2) surrounded by an open-top annular space which is divided by partitions (4) for dosage containers (3), and a cover (11), concealing the dosage containers, rotatable relative to the cassette body (1), and provided adjacent to its circular rim with a dispensing aperture (13) which is coincidable with any dosage container (3) by rotating the cover (11),  
10 the cover (11) further including a central recess (12) or a collar ring, which is fit to be embedded in the body's central opening (2), and the body is provided with a knurling (6), having a pitch which is matched to that of the dosage containers (3), and the cover (11) is provided with pawls (16) set for cooperation with the knurling (6), which provide a retaining response against  
15 rotation of the cover (11) once the cover's aperture (13) is in coincidence with a given dosage container (3), **characterized** in that the recess (12) or the collar ring of the cover (11) is provided with a window (14), through which is visible a dispensing time for at least one dose, which is printed on a dispensing schedule placed in the body's central opening (2), and that the  
20 pawls (16) are designed for allowing rotation of the cover (11) in either direction, and that said retaining response is more powerful in the cover's rotating direction backward in the dispensing schedule than in its rotating direction forward in the dispensing schedule.
- 25 2. A device as set forth in claim 1, **characterized** in that the knurling (6) is located on the circular rim of the central opening (2) and the pawls (16) comprise flexible tabs present on the outer rim of the cover's recess (12) or collar ring.
- 30 3. A device as set forth in claim 1 or 2, **characterized** in that the body's top edge has its outer rim provided with a circular hem (8) and the cover (11)

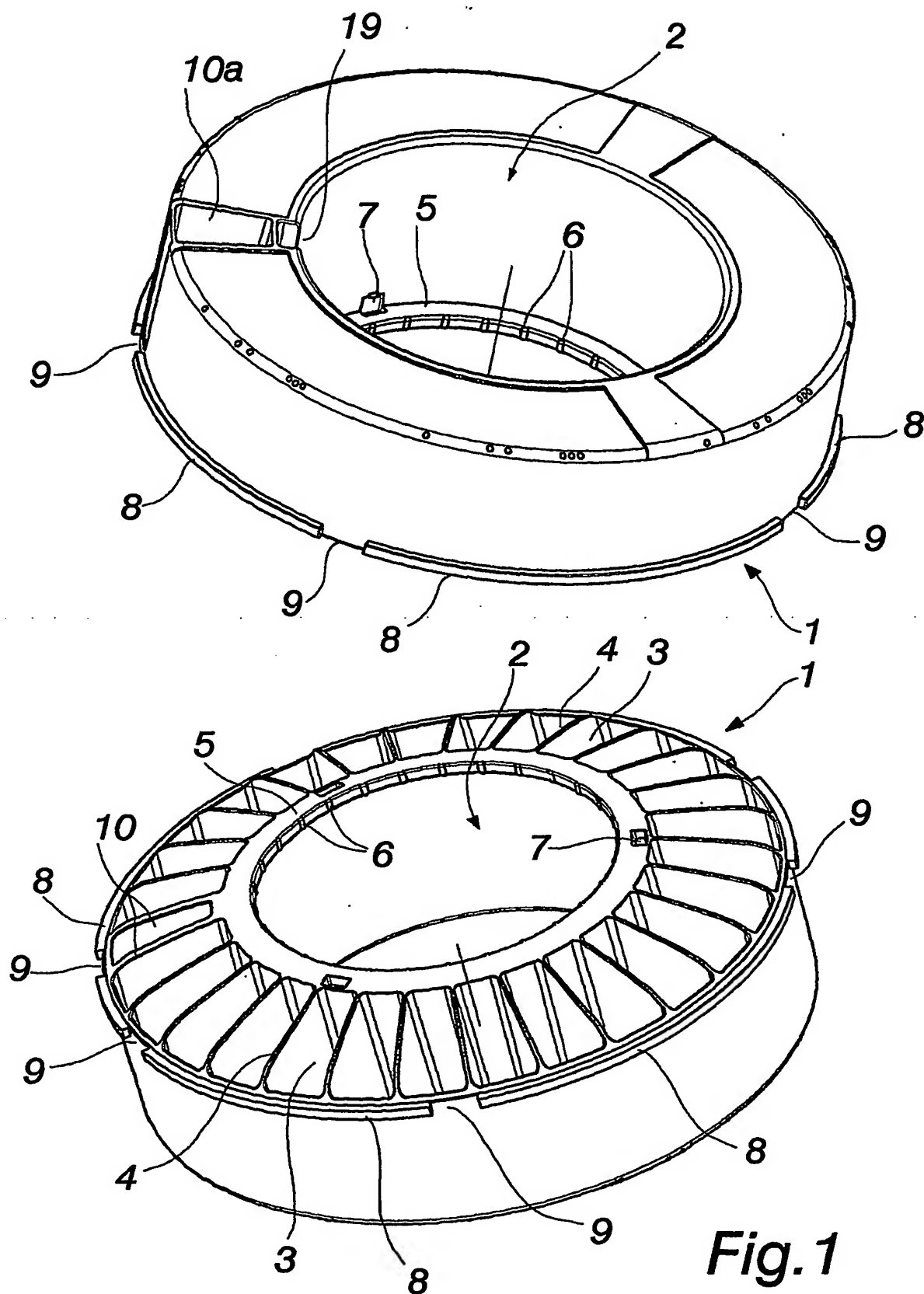


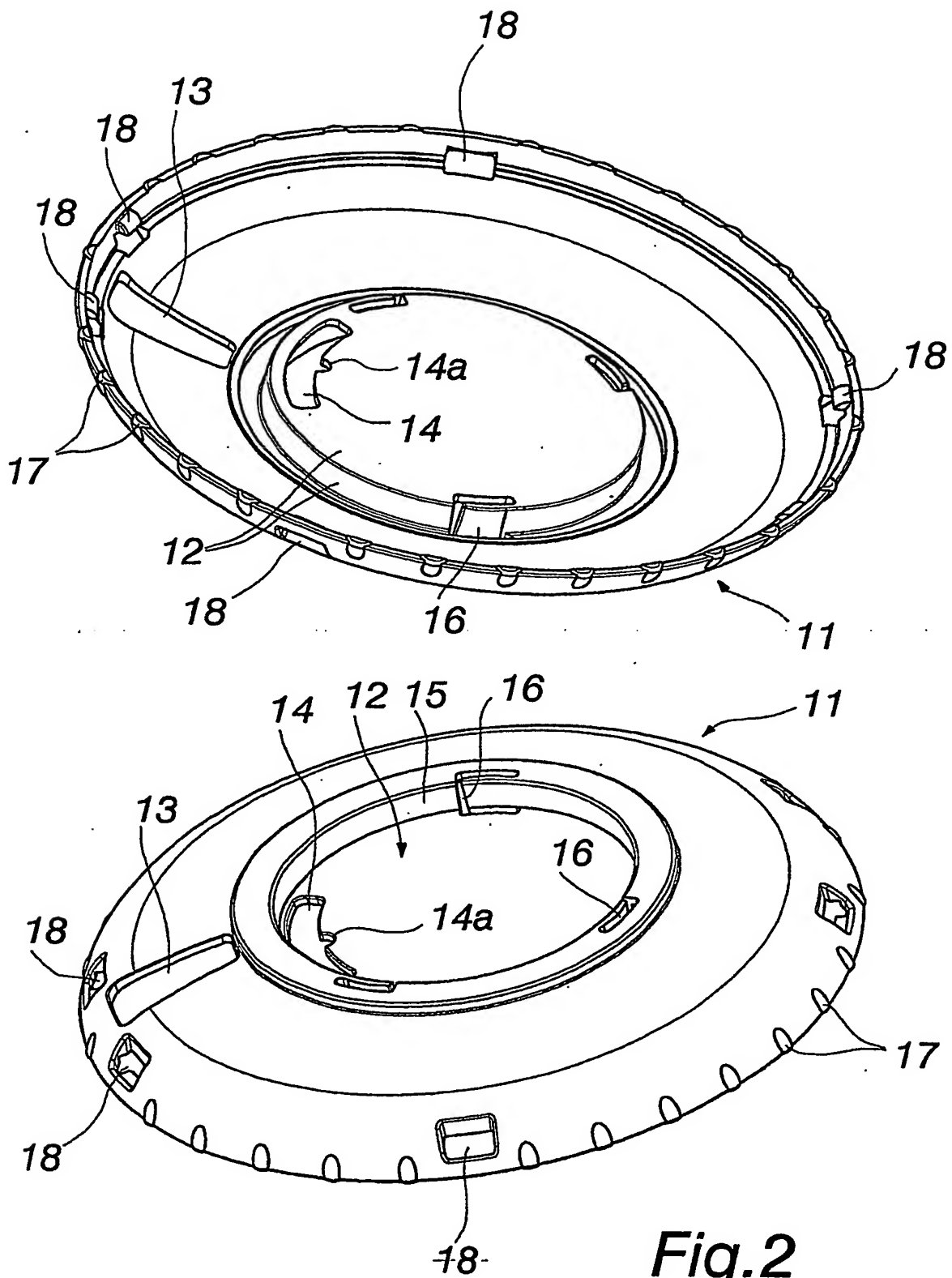
has its rim provided with inwardly directed lugs (18), the circular hem (8) being provided, at a pitch complementary thereto, with discontinuities (9) which, in just one rotary position of the cover (11), establish passages for the lugs (18) which, by rotating the cover (11), are engageable behind the  
5 circular hem (8) for retaining the cover (11) in contact with the body (1) in all other rotary positions except said rotary position allowing a passage of the lugs (18).

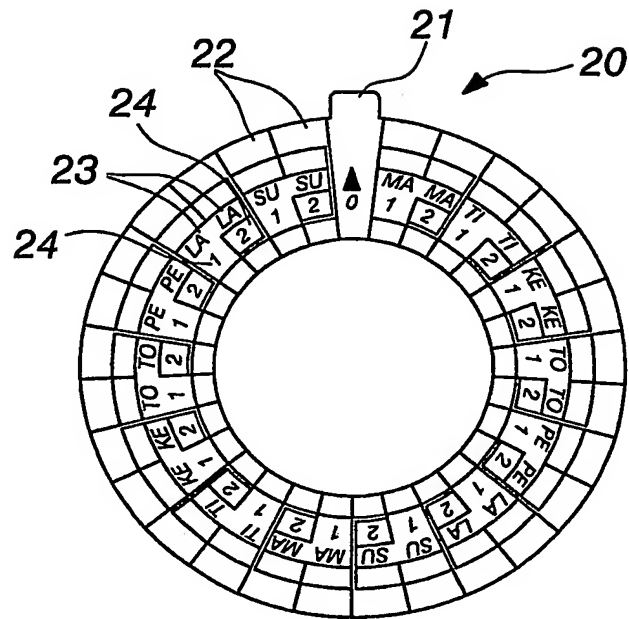
4. A device as set forth in claim 3, **characterized** in that between the first  
10 and last dosage containers (3) lies a solid-top and open-bottom compartment (10, 10a), which occupies a space matching the dosage containers' pitch, and that, in the rotary position allowing a passage of the lugs (18), the cover's dispensing aperture falls alongside the closed compartment (10, 10a).

15 5. A device as set forth in any of claims 1-4, **characterized** in that the cover has its outer rim provided with a knurling (17) for a finger grip which facilitates rotation of the cover.

20 6. A device as set forth in any of claims 1-5, **characterized** in that the dispensing schedule (20) is removable and replaceable.



**Fig.2**



**Fig. 3**

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 03/00605

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B65D 83/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B65D, A61J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6193103 B1 (CLARIJS, C.), 27 February 2001 (27.02.01), figures 1-5, abstract --	1-6
A	US 6039208 A (LAMBELET, JR., L.E.), 21 March 2000 (21.03.00), figures 1-17, abstract --	1-6
A	WO 0029306 A1 (NOVO NORDISK A/S), 25 May 2000 (25.05.00), page 3 - page 4, figure 1 --	1-6
A	US 5575392 A (CUTLER, P.A.), 19 November 1996 (19.11.96), figures 1-5, abstract --	1-6

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

12 November 2003

Date of mailing of the international search report

19-11-2003

Name and mailing address of the ISA/

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Pär Moritz /OGU

Telephone No. +46 8 782 25 00

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 03/00605

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5477981 A (HEYL, P. ET AL), 26 December 1995 (26.12.95), figures 1-6, abstract --	1-6
A	US 4572376 A (WRENNALL, R.K.), 25 February 1986 (25.02.86), figures 1-10, abstract --	1-6
A	US 4078661 A (THOMAS, M.D.), 14 March 1978 (14.03.78), figures 1-6, abstract -- -----	1-6

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

06/09/03

International application No.

PCT/FI 03/00605

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
US	6193103	B1	27/02/01	AT	191897 T	15/05/00
				AU	715636 B	10/02/00
				AU	3338197 A	07/01/98
				BR	9709709 A	10/08/99
				CA	2258039 A	18/12/97
				DE	69701736 D,T	23/11/00
				DK	907583 T	21/08/00
				EP	0907583 A,B	14/04/99
				SE	0907583 T3	
				ES	2146102 T	16/07/00
				GR	3033959 T	30/11/00
				HU	221786 B	28/01/03
				HU	0001794 A	28/12/00
				JP	2000511853 T	12/09/00
				KR	2000016650 A	25/03/00
				NO	985834 A	11/02/99
				NZ	333316 A	29/07/99
				PL	330420 A	10/05/99
				PT	907583 T	31/08/00
				TR	9802593 T	00/00/00
				WO	9747534 A	18/12/97

---

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

06/09/03

International application No.  
PCT/FI 03/00605

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	6039208	A	21/03/00	AU 728571 B	11/01/01
				AU 2035999 A	30/09/99
				EP 0943559 A	22/09/99
				JP 11313873 A	16/11/99
				US 5799821 A	01/09/98
				US 5975347 A	02/11/99
				US 6138866 A	31/10/00
				AT 165785 T	15/05/98
				AU 684178 B	04/12/97
				AU 2714995 A	08/02/96
				BR 9503497 A	30/07/96
				CA 2154938 A	30/01/96
				CN 1058465 B	15/11/00
				CN 1127213 A	24/07/96
				CZ 9501789 A	16/10/96
				CZ 9602325 A	16/10/96
				DE 69502359 D,T	01/10/98
				DK 696544 T	15/03/99
				EP 0696544 A,B	14/02/96
				SE 0696544 T3	
				ES 2117835 T	16/08/98
				FI 953623 A	30/01/96
				HU 73096 A	28/06/96
				HU 9502187 D	00/00/00
				IL 114351 A	15/06/98
				JP 8058858 A	05/03/96
				NO 953007 A	30/01/96
				NZ 272509 A	22/09/97
				NZ 328493 A	19/12/97
				PL 177932 B	31/01/00
				PL 309823 A	05/02/96
				SG 32425 A	13/08/95
				SG 73494 A	20/06/00
				SG 83099 A	18/09/01
				US 5551597 A	03/09/96
				US 5562231 A	08/10/96
				US 5570810 A	05/11/96
				US 5775536 A	07/07/98
				ZA 9506328 A	28/01/97
WO	0029306	A1	25/05/00	AU 1263000 A	05/06/00
				BR 9915294 A	07/08/01
				CA 2350505 A	25/05/00
				CN 1326414 T	12/12/01
				CZ 20011606 A	17/07/02
				EP 1149033 A	31/10/01
				HU 0104047 A	28/03/02
				IL 142542 D	00/00/00
				JP 2002529338 T	10/09/02
				NO 20012329 A	12/07/01
				PL 347436 A	08/04/02
				US 6325241 B	04/12/01
US	5575392	A	19/11/96	CA 2017455 A	26/11/90
				US 5154296 A	13/10/92



**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

06/09/03

International application No.

PCT/FI 03/00605

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	5477981	A	26/12/95	NONE	
US	4572376	A	25/02/86	NONE	
US	4078661	A	14/03/78	NONE	